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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit:	3663
Attorney Docket No.:	121048-0006
Applicant:	Ping-Wha LIN
Invention:	FUEL CELLS THAT OPERATE ON NUCLEAR REACTIONS PRODUCED USING RAPID TEMPERATURE CHANGES
Serial No:	10/723,396
Filed:	November 26, 2003
Examiner:	Richardo Palabrica

Certificate Under 37 CFR 1.8(a)

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

on December 19, 2007

Michael S. Gzybowski

CORRECTED BRIEF ON APPEAL

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Further to appellant's Notice of Appeal filed April 2, 2007 in connection with the above-identified application, and in response to the Notification of Non-Compliant Appeal Brief mailed September 19, 2007 appellant submits the present Corrected Brief on Appeal.

REAL PARTY IN INTEREST

Appellant has not assigned this application to any other entity. The Real Party in Interest is the inventor whose name is Mr. Ping-Wha Lin.

RELATED APPEALS AND INTERFERENCES

Appellant's copending U.S. Patent Application Serial No. 10/255,216 is directed to related subject matter and is on appeal based on similar rejections.

STATUS OF CLAIMS

Claims 1-12, 14, 16 and 18-32 are pending in this application. Claims 1-9, 21-26 and 28-30 stand under final rejection, from which final rejection of claims 1-9, 21-26 and 28-30 this appeal is taken. Claims 10-12, 14, 16, 18-20, 27 31 and 32 stand withdrawn as being directed to a non-elected invention. Claims 13, 15 and 17 have been canceled.

STATUS OF AMENDMENTS

No Amendment(s) after Final Rejection was/were filed in this application.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention as set forth in independent claim 1 is directed to a method of generating electricity which comprises:

a) providing a reactor (See Figs. 5B, and 7-10 and page 43, lines 13-17) which comprises:

a heat reservoir (315, Figs. 5B, and 7-9) at an upstream side;

a cold reservoir (319, Figs. 5B, and 7-9) at a downstream side;

a connecting pipe connected between the heat reservoir and the cold reservoir (tubular reactor wall extending between heat reservoir 315 and cold reservoir 319 in Figs. 5B and 7-9);

a gas inlet at the upstream side (shown at the right-had side in Fig. 5B and the left-hand side in Figs. 7-10);

a gas outlet at the downstream side (shown at the left-had side in Fig. 5B and the right-hand side in Figs. 7-10);

means for flowing a stream of gas containing water through the reactor from the upstream side to the downstream side (See air flow arrows shown at the right-had side in Fig. 5B and the left-hand side in Figs. 7-10);

means for heating the gas stream flowing through said reactor at a sufficient rate to cause non-equilibrium reactions to occur in the reactor so that components of said stream of gas to undergo nuclear reactions and produce free electrons (See flame from burner #1 shown at the right-had side in Fig. 5B and the left-hand side in Figs. 7-10); and

a magnet (322, Figs. 7-9) and a conductive collector (See page 36, line 8 through page 37, line 2) for collecting and removing freed electrons from the reactor;

b) providing a gas stream that contains water as a source of hydrogen atoms (See page 28, lines 13-14 and note that the specific reference to water was added to limit the source of hydrogen in the original claim language);

c) flowing the gas stream through the reactor using the means for flowing (See air flow arrows shown at the right-had side in Fig. 5B and the left-hand side in Figs. 7-10) ;

d) using the means for heating to heat the gas stream at a rapid rate sufficient to:

i) produce hydrogen atoms from the water (See page 28, lines 13-14);

ii) transform the produced hydrogen atoms into protons and free electrons (See page 29, third line from bottom through page 30, line 1); and

iii) induce a sustained chain reaction, including nuclear reactions (See the paragraph bridging pages 34 and 35 of appellant's specification and as further discussed under the section entitled "Nuclear Reactions in the Reactor" beginning on page 32 of appellant's specification.); and

e) using the magnet and conductive conductor to collect the free electrons as a source of electricity (See page 36, line 8 through page 37, line 2).

The overall process involves passing a gas stream containing water as a source of hydrogen into the inlet of the reactor.

The gas stream is rapidly heated at the upstream heat reservoir by applying a concurrent flame to the gas stream at a distance upstream from the upstream heat reservoir and by a

countercurrent flame in the connecting pipe as discussed in the first full paragraph on page 33 of appellant's specification.

The rapid heating is carried out at a rapid rate sufficient to: i) produce hydrogen ions from the hydrogen atoms; ii) transform the produced hydrogen ions into protons and electrons; and iii) induce nuclear reactions in the upstream reservoir and at a section of the connection pipe where the countercurrent flames are applied by mutual bombardments of accelerated particles, including electrons, neutrons and protons, in a plasma fluid as discussed in the paragraph bridging pages 34 and 35 of appellant's specification and as further discussed under the section entitled "Nuclear Reactions in the Reactor" beginning on page 32 of appellant's specification.

Part of the heat from the concurrent flame and the heat generated from reactions in the flowing gas occurring by radiation and convection is retained in the upstream heat reservoir (315) and so that after start-up the application of heat by the concurrent and the countercurrent flames to the gas stream can be terminated as discussed in the first full paragraph on page 33 of appellant's specification.

The heat generated from the nuclear reaction is used to induce subsequent continuous nuclear chain reactions by high rate of temperature increase of the gas flow and thereby produce an uninterrupted release of heat from the reactor.

Magnets are used to control the plasma that includes free electrodes and collector plates are used to collect the electrons as discussed on page 35, line 2 through page 37, line 2 of appellant's specification.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether specification has been properly objected to under 35 U.S.C. §112, first paragraph has failing "to provide an adequate written description of the invention and as failing to adequately teach how to make and/or use the invention, i.e. failing to provide an enabling disclosure."

Whether claims 1-9, 21-26 and 28-30 stand properly rejected under 35 U.S.C. §101 as being inoperative and lacking utility.

Whether claims 1-9, 21-26 and 28-30 stand properly rejected under 35 U.S.C. §112, first paragraph.

ARGUMENT

The Objection to the Specification Under 35 U.S.C. §112, First Paragraph as Failing to Provide an Adequate Written Description of the Invention and as Failing to Adequately Teach How to Make and/or Use the Invention, i.e., Failing to Provide an Enabling Disclosure

Appellant's independent claim 1 is directed to a method of generating electricity which method comprises the steps of:

a) providing a reactor which comprises:

a heat reservoir at an upstream side;

a cold reservoir at a downstream side;

a connecting pipe connected between the heat reservoir and the cold reservoir;

a gas inlet at the upstream side;

a gas outlet at the downstream side;

means for flowing a stream of gas containing water through the reactor from the upstream side to the downstream side;

means for heating the gas stream flowing through said reactor at a sufficient rate to cause non-equilibrium reactions to occur in the reactor so that components of said stream of gas to undergo nuclear reactions and produce free electrons; and

a magnet and a conductive collector for collecting and removing freed electrons from the reactor.

b) providing a gas stream that contains water as a source of hydrogen atoms;

c) flowing the gas stream through the reactor using the means for flowing;

d) using the means for heating to heat the gas stream at a rapid rate sufficient to:

i) produce hydrogen atoms from the water;

ii) transform the produced hydrogen atoms into protons and free electrons; and

iii) induce a sustained chain reaction, including nuclear reactions; and

e) using the magnet and conductive conductor to collect the free electrons as a source of electricity.

Experiments conducted at an accredited laboratory in Research Triangle, N.C. and documented in appellant's specification at page 19, *et seq.* confirm that together with the

disappearance of H_2O (evidenced by the lack of formation of H_2SO_4) the tested reactor produced and sustained substantial heat generation (with a change from ambient air temperature of 90°F to as high as 582 °F) over a prolonged period of time (sixteen hours) during which the only feed into the reactor was ambient air.

From this measured data, appellant has determined that the quantity of heat generated is proportional to the amount of energy that would have been generated by subjecting the hydrogen atoms in the ambient air to nuclear reactions.

It is well known that fusion reactions can be initiated by means of high temperatures. For example, atomic bombardment can be used to generate the necessary heat to initiate fusion reactions.

The present inventor has discovered that sudden rapid heating, and not merely heating alone, can initiate reactions that do not follow normal reaction equilibrium conditions. Examples of such reactions are explained in the specification and include the production of SO_3 from SO_2 without the use of standard reaction catalysts.

During the course of the present invention the present inventor further discovered that rapid heating of ambient air can be used to initiate an exothermic reaction that can be sustained merely by supplying an ambient or room temperature fed of air that contains water molecules. During the sustained reaction, the water molecules are consumed, indicating that hydrogen atoms have been dissociated from the water molecules and thereafter involved in nuclear reactions which produce free electrons that can be captured using magnets and conductive conductors.

The enablement requirements of 35 U.S.C. §112, first paragraph are believed to be satisfied by appellant's disclosure inasmuch as the specification includes actual working examples and the

claims merely recite the method steps followed in the working examples.

Note, 35 U.S.C. §112, first paragraph states:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

One skilled in the art can easily and readily practice appellant's claimed invention based upon the disclosure.

Although it seems that the Examiner is unconvinced that appellant's invention operates in the manner described in the specification; nevertheless, it is submitted that appellant has provided a detailed description as to how to practice the invention and has provided in the specification working examples of producing sustained exothermic reactions which were conducted by a reputable research facility in Research Triangle Park in North Carolina.

The detailed procedure of the testing that was conducted in Research Triangle Park is provided in the specification. This disclosure, it is submitted, provides one skilled in the art with sufficient information to repeat appellant's testing procedure, and the description of providing magnets and conductors to collect freed electrons provides one skilled in the art with sufficient information to collect and use the freed electrons.

Moreover, from the testing it was found that: 1) the reactor produced a sufficient amount of heat many hours (sixteen) during which interval of time no reactants were feed into the reactor and only a continuous flow of ambient air flowed continuously through the reactor; and 2) all moisture in the ambient air disappeared and therefore, absent any reactants, became dissociated

into hydrogen and oxygen by the rapid heating (such dissociation caused by heating is well known as shown by Exhibit A attached hereto).

What appellant has determined, and proven to the acceptance of the scientific community, is that when heat energy is injected rapidly into a system containing chemical species such as water, the activities of particles (molecules, atoms or nuclei, and electrons) are increased: the particles are accelerated; frequencies and amplitudes of electron and atomic vibrations in a molecule increase; average kinetic energy of the particles increases; atomic bonds are ruptured; and electrons are caused to leave their orbits. This proven outcome has been referred to as Lin's Theory of Flux.

Based upon the research testing, the known fact that water can be dissociated into hydrogen and oxygen by high temperatures, the fact that the dissociated hydrogen and oxygen did not re-convert back into water, and the principles of Lin's Theory of Flux, the present inventor, and those skilled in the art, has reasonable concluded that the sustained heating witnessed in the research testing at Research Triangle Park had to have been associated with activities at the sub-atomic level. Calculations provided in the specification confirm that the only possibility of generating the heating that was witnessed was due to the formation of protons and free electrons.

The present invention, as set forth in the claims, merely involves collecting the free or freed electrons for use in developing electrical potential.

It is noted that the present inventor has been invited as a frequent speaker at both national and international conferences worldwide on nuclear and alternative energies. Moreover, appellant has applied for corresponding patents in China and the UK which have been approved

and accepted. Accordingly, the scientific community has accepted Lin's Theory of Flux together with how it is applied in the instant invention to produce heat and electrical energy.

The Examiner has made repeated reference to the fact that appellant has not conducted actual "nuclear measurements."

The Examiner's position overlooks that, in addition to direct evidence, science often relies upon inference, which appellant has reasonable done in the present situation.

On page 12 of the Office Action of January 19, 2007 (referred to as being relied upon in the Final Rejection), the Examiner states that:

> ... the examiner has presented evidence showing that in cold fusion systems, the claims of excess heat (as well as of other nuclear reaction products), are not reproducible or even obtainable. It consequently must follow that the claims of excess heat or nuclear reactions are not reproducible of even obtainable with applicant's invention.

The Examiner's "evidence" is not at all related or similar to appellant's invention or discovery or working examples.

The Examiner's "evidence" relies upon "electrolytes," "electrochemical cell systems," "palladium cathodes," "heavy water," etc. Such "evidence is not at all applicable or comparable to appellant's invention.

The Examiner has referred to the fact that the experiments and results reported by Fleichmann and Pons were not achievable and thus not verified by others.

Fleichmann and Pons announced in 1998 that that they had achieved nuclear fusion at room temperature by electrolyzing heavy water in a cell containing a palladium cathode while monitoring levels of tritium and neutron-capture gamma. In this connection, the Examiner

supplies many reference papers to counter Fleichmann and Pons. The reference papers show that many scientists have conducted identical tests thereafter, and the results show that no activity was detected that would indicate sustained fusion reaction has take place.

Fleichmann and Pons involves the use a batch process. If the heat production is excessive (from nuclear fusion), the heavy water in the cell will evaporate. Therefore, from common sense, the heat production from the process is very small. So even if there is heat production, it is insignificant and inconsequential, and not attributed to nuclear reactions.

The cold fusion mentioned involves an electro-chemical process. Fleichmann and Pons flails to explain the mechanism of how the reactions happened. Moreover, they could not be substantiated by the third parties testing results. The heat released is small according to the experimental results.

The manner of producing continuously excess heat according to the present invention is not based on inoperative concept of cold fusion as set forth by Fleischmann and Pons.

The Examiner's inference that that the testing by appellant at Research Triangle Park was biased because appellant funded the testing implies that only experimental testing that is not funded by a patent appellant is acceptable as being unbiased. This position of course is insurmountable by all patent appellants, especially independent, small entities and therefore unfairly prejudices appellant.

The Examiner's comments in paragraph 4 of the Final Rejection overlook the known fact that thermonuclear reactions occur in a form of matter called plasma and that plasma is a gas-like substance made up of free electrons and free nuclei (nuclei that have no electrons revolving about

them).

Appellant's invention involves thermal reactions rather than electro-chemical processes such as Fleichmann and Pons.

The Rejection of Claims 1-9, 21-26 and 28-30 Under 35 U.S.C. §101 as Being Inoperative and Lacking Utility.

The Examiner has stated that the reasons that the invention as disclosed as being inoperable are the same reasons that the specification was objected to under 35 U.S.C. §112, first paragraph as failing to provide an enabling disclosure which are addressed above.

The Rejection of Claims 1-9, 21-26 and 28-30 Under 35 U.S.C. §112, First paragraph.

The Examiner has stated that the reasons that the invention as disclosed as being inoperable are the same reasons that the specification was objected to under 35 U.S.C. §112, first paragraph as failing to provide an enabling disclosure which are addressed above.

The undersigned, a former patent Examiner, is fully aware of the PTO's position on "cold fusion" and understands the Examiner's position.

However, the Examiner's position on the record is not believed to establish a proper basis for rejecting appellant's claimed invention.

In this regard, the PTO's established position on cold fusion which is based upon Fleichmann and Pons and others is not at all similar or applicable to appellant's invention.

Moreover, appellant has demonstrated by experimental testing that the process of the present invention produces sustained heat while water molecules disappear.

CONCLUSION

For the reasons advanced above, appellant respectfully contends that the objection to the objection of the specification under 35 U.S.C. §112, first paragraph is improper as appellant's specification provides an enabling disclosure to those skilled in the art.

Further for the reasons advanced above, appellants respectfully contends that the rejections of claims 1-9, 21-26 and 28-20 under 35 U.S.C. §101 as being inoperative is improper as appellant's specification includes experimental results and a disclosure that enables those skilled in the art to practice the invention.

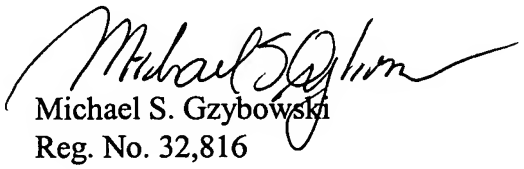
Further for the reasons advanced above, appellants respectfully contends that the rejections of claims 1-9, 21-26 and 28-30 under 35 U.S.C.§112, first paragraph as containing subject matter that is not described in such a way as to enable one skilled in the art to practice the invention is improper as appellant's specification includes a disclosure that enables those skilled in the art to practice the invention.

Reversal of each of the rejections on appeal is respectfully requested.

To the extent necessary, a petition for an extension of time under 37 CFR §1.136 is hereby made. Please charge the fees due in connection with the filing of this paper, including extension of

time fees, to Deposit Account No. 12-2136 and please credit any excess fees to such deposit account.

Respectfully submitted,



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CLAIMS APPENDIX

Claim 1. A method of generating electricity which comprises:

a) providing a reactor which comprises:

a heat reservoir at an upstream side;

a cold reservoir at a downstream side;

a connecting pipe connected between the heat reservoir and the cold reservoir;

a gas inlet at the upstream side;

a gas outlet at the downstream side;

means for flowing a stream of gas containing water through the reactor from the upstream side to the downstream side;

means for heating the gas stream flowing through said reactor at a sufficient rate to cause non-equilibrium reactions to occur in the reactor so that components of said stream of gas to undergo nuclear reactions and produce free electrons; and

a magnet and a conductive collector for collecting and removing freed electrons from the reactor;

b) providing a gas stream that contains water as a source of hydrogen atoms;

c) flowing the gas stream through the reactor using the means for flowing;

d) using the means for heating to heat the gas stream at a rapid rate sufficient to:

i) produce hydrogen atoms from the water;

ii) transform the produced hydrogen atoms into protons and free electrons; and

iii) induce a sustained chain reaction, including nuclear reactions; and

e) using the magnet and conductive conductor to collect the free electrons as a source of electricity.

Claim 2. A method of generating electricity according to claim 1, further comprising:

terminating the application of heat to the gas stream after the sustained chain reaction, including nuclear reactions are induced; and

allowing the sustained chain reaction, including nuclear reactions to continue in reactive species of the gas stream.

Claim 3. A method of generating electricity according to claim 1, wherein the nuclear reactions include nuclear fusion.

Claim 4. A method of generating electricity according to claim 1, wherein the gas stream comprises one of air and a flue gas.

Claim 5. A method of generating electricity according to claim 1, wherein the rapid heating performed in step a) is performed by using at least one of a flame generator, a laser beam, an electric arc and a microwave generator.

Claim 6. A method of generating electricity according to claim 1, further comprising the

step of adding a chemical reactant species into the gas stream prior to applying heat to the gas stream and collecting a chemical reaction product produced from the added chemical reactant species.

Claim 7. A method of generating electricity according to claim 1, further comprising recovering heat produced from the sustained chain reaction.

Claim 8. A method of generating electricity according to claim 1, wherein the method further comprises reacting the collected free electrons with the protons away from an area where the chain reaction occurs.

Claim 9. A method of generating electricity according to claim 8 further comprises rapidly cooling the gas stream in the cold reservoir to facilitate reacting the collected free electrons with the protons to form hydrogen.

Claims 10 (Withdrawn): A nuclear reactor that produces electricity, which nuclear reactor comprises:

a heat reservoir at an upstream side;

a cold reservoir at a downstream side;

a connecting pipe connected between the heat reservoir and the cold reservoir;

a gas inlet at the upstream side;

a gas outlet at the downstream side;

a source of gas containing water;

means for flowing a stream of the gas containing water through the reactor from the upstream side to the downstream side;

means for heating the gas stream flowing through said reactor at a sufficient rate to cause non-equilibrium reactions to occur in the reactor so that components of said stream of gas ~~to~~ undergo nuclear reactions and produce free electrons; and

a magnet and a conductive collector for collecting and removing freed electrons from the reactor.

Claim 11 (Withdrawn): A nuclear reactor that produces electricity according to claim 10, wherein the means for heating the gas stream flowing through said reactor comprises a first co-current means for heating the gas stream and a second countercurrent means for heating the gas stream with the first means for heating the gas stream being upstream of the second means for heating the gas stream.

Claim 12 (Withdrawn): A nuclear reactor that produces electricity according to claim 10, further including means to re-introduce the removed electrons into a downstream portion of the reactor so that the re-introduced electrons can react with protons to form hydrogen in the cold reservoir.

Claim 13 (Canceled)

Claim 14 (Withdrawn): A nuclear reactor that produces electricity according to claim 10, further including a heat exchanger for recovering heat from the reactor, the heat exchanger being located downstream of the heat reservoir.

Claim 15 (Canceled):

Claim 16 (Withdrawn): A nuclear reactor that produces electricity according to claim 11, wherein both the first and second means to heat the gas flowing through the reactor comprises flame generators which direct flames toward each other.

Claim 17 (Canceled)

Claim 18 (Withdrawn): A nuclear reactor that produces electricity according to claim 10, further comprising means to inject a chemical species for increasing nuclear reaction activities into the stream of gas flowing through the reactor.

Claim 19 (Withdrawn): A nuclear fuel cell that comprises:

a reactor having an upstream side and a downstream side;

a gas inlet at the upstream side;

a gas outlet at the downstream side;

means for flowing a stream of gas through the reactor from the upstream side to the downstream side;

means for heating the gas stream flowing through said reactor at a sufficient rate to cause non-equilibrium reactions to occur in the reactor so that components of said stream of gas ~~to~~ undergo nuclear reactions and produce protons and free electrons;

and a cold reservoir at a downstream portion of the reactor for cooling the gas stream so as to recombine electrons and protons to form hydrogen.

Claim 20 (Withdrawn): The combination of a nuclear fuel cell according to claim 19, in an internal combustible engine vehicle wherein hydrogen produced by the nuclear fuel cell is used as a fuel in internal combustible engine.

Claim 21. A method of generating electricity according to claim 1, wherein the gas stream includes a chemical species and the method further involves rapidly cooling the heated gas stream after step e) in a cold reservoir to effect a change in the chemical species.

Claim 22. A method of generating electricity according to claim 21, wherein the rapid cooling affects at least one of:

i) decomposition of NO_x;

ii) decomposition of CO_2; and

iii) decomposition of SO_x.

Claim 23. A method of generating electricity according to claim 6, wherein the chemical reactant comprises limestone and the chemical reaction product comprises lime.

Claim 24. A method of generating electricity according to claim 1, wherein the gas stream comprises flue gas that contains H_2S which is dissociated into H_2 and S in step b).

Claim 25. A method of generating electricity according to claim 1, wherein fuel oil is added to the gas stream and the fuel oil is transformed into light hydrocarbons in step b).

Claim 26. A method of generating electricity according to claim 6, wherein the chemical reactant comprises SO_2 and water and the chemical reaction product comprises H_2SO_4.

Claim 27 (Withdrawn): A nuclear reactor that produces electricity according to claim 19, further comprising means to inject coolant into the cold reservoir to initiate the combination of electrons and protons to form hydrogen.

Claim 28. A method of generating electricity according to claim 26, wherein SO_2 is oxidized to SO_3 by a high rate of temperature increase due to the nuclear reaction and steam is injected to react with the SO_3 to form H_2SO_4.

Claim 29. A method of generating electricity according to claim 28, the temperature of the injected steam is equal or higher to the temperature of the SO_3 containing gas flow at point of injection to form H_2SO_4 mist in the reactor.

Claim 30. A method of generating electricity according to claim 29, wherein the H_2SO_4 mist is condensed to H_2SO_4 liquid to a temperature of about 250°F and collected.

Claim 31 (Withdrawn): A nuclear reactor that produces electricity according to claim 10, wherein the cross sectional area of heat reservoir is at least fifteen times that of connecting pipe, the cross sectional area of cold reservoir is equal to that of heat reservoir, and the cross sectional area of connecting pipe is the same as that of an incoming pipe to the reactor.

Claim 32 (Withdrawn): A nuclear reactor that produces electricity according to claim 10, further comprising means to recycle a portion of the gas stream flowing through the reactor and means to add water to the recycled gas stream.

EVIDENCE APPENDIX

Not Applicable

RELATED PROCEEDINGS APPENDIX

U.S. Patent Application Serial No. 10/255,216 is on appeal before the Board of Patent Appeals and interferences.